TECHNOLOGY FOR
Alaskan Transportation
Local Technical Assistance Program

Summer 1995
Volume 20 Number 2
April - June 1995

IN THIS ISSUE . . .

INSERTS . . .

CALENDAR . . .

SPECIAL INSERTS . . .

This newsletter is funded by a grant from the Federal Highway Administration and the Alaska Department of Transportation and Public Facilities.

Soils/Aggregate Materials Inspection Training for Alaska Natives

Curtis Wright, Fairbanks; Brian Demoski, Fairbanks; Brian Sanford, Tok; Mack Wiehl, Rampart; Allen McGinty, Nulato; and Detlef Morrison, Fairbanks, learned the basics of soils inspection and testing during a class held in Fairbanks on April 3-7, 1995. Kevin Little and Clyde Iytunguk, along with Department of Transportation and Public Facilities (DOT&PF) employees Jackson Reed, Dave Holly, and Joel Rose, learned the same information in Nome on April 24-28, 1995. Topics covered included: map and plans reading, responsibilities of a material lab tech-

Curtis Wright observes as Mack Wiehl demonstrates the modified proctor test.

(continued on page 4)

Work Zone Traffic Safety

by Bob Sickler, Associate Traffic Engineer, Municipality of Anchorage Public Works

The Federal Manual on Uniform Traffic Devices for Streets and Highways (MUTCD) states, "the purpose of traffic control devices and warrants for their use is to help insure highway safety by providing for the orderly and predictable movement of all traffic and to provide such guidance and warnings as are needed to insure the safe and uniform operation of individual elements of the traffic stream. Traffic control devices are used to direct and assist vehicle operators in the guidance and navigation tasks required to traverse safely any facility open to public travel." The MUTCD lists five basic requirements for traffic control devices. They must:

1) fulfill a need
2) command attention
3) convey a clear, simple meaning
4) command respect of road users

(continued on page 3)

New Alaska T2 Advisory Board Members

Several changes have occurred on the Alaska Transportation Technology Transfer (T2) Program Advisory Board since September.

Federal Highway Administration (FHWA) representative Gary Wilson retired after twenty-eight years of service at the end of September; Jerald Heimbuch filled the representative slot until Drew Seilbach, the new Local Technical Assistance Program (LTAP) person at FHWA, transferred from Missouri. Farewell and best wishes to Gary; thank you, Jerry, for your interim help; and welcome, Drew, to your new responsibilities--we trust it'll be fulfilling--and fun.

Ron Tanner, Traffic Section, Design and Construction, Northern Region, who has represented Alaska Department of Transportation and Public Facilities since Alaska T2's beginning in 1986, has stepped down. Thank you, Ron, for your untiring assistance and excellent support. We welcome George Levasseur, DOT&PF's Southcentral District Manager, Valdez, who replaces Ron. He brings a wealth of maintenance and operations experience with him.

Dave Jacoby, Public Works Director for the City of Fairbanks, has stepped down. Thank you, Dave, for your assistance. We welcome Rufus Bunch, City Engineering, City of Fairbanks. Rufus is sharing his expertise with the rest of the Board.

Bill Ellis, Street Superintendent for the City and Borough of Juneau has stepped down. Thank you, Bill, for sharing your experience and expertise with our Board. We welcome Ernie Mueller, Public Works Director, City and Borough of Juneau. Ernie will be attending his first board meeting in October and we are looking forward to meeting with him and learning about his expertise.

And finally, David Esch, Research Engineering, Engineering and Operations, Headquarters, who has been on the board since 1992 retired the first of August after a 3_ year career with the Department of Transportation and Public Facilities. Thank you, Dave, for all your assistance and support for the Alaska T2 Program. We welcome Matthew Reckard, who has taken Dave's position. Matt has been with the DOT&PF for a number of years and is an author of several of the Statewide Research Reports available for loan through Alaska T2's library.

A thirteen-member Advisory Board from across the state helps the Alaska T2 staff to assess the training needs of transportation workers in Alaska, select courses to present, and choose areas for developing courses to address unique and specific needs. Advisory Board members also share their experience an expertise by contributing articles to this newsletter.▼

News & Views

8th Annual Equipment Maintenance Management Conference

Make plans to attend the 8th Annual Equipment Management Conference (EMMC), October 30 - November 2, 1995, in Las Vegas, Nevada. This conference is designed for equipment managers, shop foremen, lead mechanics, or anyone that manages or maintains fleets of heavy equipment. The conference will include:

- 46 hours of instruction over 3 days,
- expert speakers, leaders in their field,
- 12 information packed seminars to choose from,
- 15 question and answer panels,
- "Mechanic of the Year" award,
- major industry equipment manufacturers and suppliers,
- trade show, and
- tour Hoover Dam.

EMMC is dedicated to improving the quality of both management and maintenance skills in the equipment industry. Question and answer panels provide the opportunity to direct questions to industry specialists and technical experts. Seminars offer a body of knowledge on a specific topic.▼

Traffic Expo '96 on Schedule for San Diego

Traffic Expo '96 and the 26th Annual ATSSA Convention, sponsored by the American Traffic Safety Services Association (ATSSA), will take place January 27-29, 1996, in San Diego, CA.

Information on attending and exhibiting at Traffic Expo '96 is available from ATSSA by contacting Shawn Settle at (540) 898-5400.▼

New Work Zone Traffic Safety
(continued from page 1)

5) give adequate time for proper response

Five basic conditions are employed to insure that these requirements are met: design, placement, operation, maintenance, and uniformity.

The need for standard controls is especially acute during roadway construction, maintenance, and utility (work zone) operations. Abnormal conditions are the rule, and therefore, traffic is particularly dependent on design, placement, and uniformity of traffic control devices to direct and guide it safely and efficiently through what would otherwise be hazardous areas. The constantly shifting and changing nature of work zone activity on or adjacent to the roadway requires frequent readjustments of traffic control devices in order to handle new situations. Thus, the proper and adequate placement of standard highway signs, signals, pavement markings, channelizing devices, and other traffic control devices on roadways in work zones is a continuous responsibility of officials having authority and jurisdiction over the particular roadway.

Part VI of the MUTCD specifies the requirements of *Traffic Controls for Street and Highway Construction, Maintenance, Utility, and Emergency Operations*. Section 6B-6 states "each person whose actions affect temporary traffic control zone safety—from upper-level management personnel through field personnel—should receive *training* appropriate to the job decisions each is required to make. Only those *trained* in safe traffic control practices, and who have a basic understanding of the principles established by applicable standards and regulations (including the MUTCD), should supervise the selection, placement and maintenance of traffic control devices in work and incident management areas."

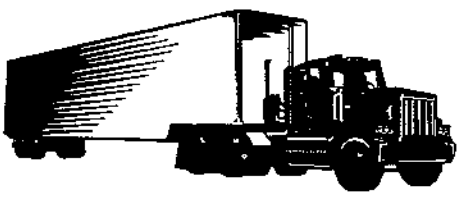
Work zone traffic control is an important function affecting the safety of the traveling public, contractor personnel, and agency employees. Every reasonable effort should be made to eliminate or reduce involvement in accidents within work zones. Proper traffic control *training* is vital to achieving this objective. Many public agencies prescribe work zone traffic control *training* requirements for their employees. Agency employees responsible for work zone traffic control plan design, implementation, inspection and/or for supervising the selection, placement or maintenance of traffic control schemes and devices in work zones may be required to satisfy complete certification requirements. Completion of a work zone traffic control *training* course by contractor, consultant, and utility company personnel performing work on agency projects or within the public right-of-way may also be required. The State of Alaska Standard Specifications for Highway Construction (Section 643-1.03) requires Work Zone Traffic Control certification for any Worksite Traffic Supervisor that is to be provided by the contractor for maintenance of traffic operations on highway construction projects.▼

Dalton Highway Added to National Highway System

On June 21, 1995 the U.S. Department of Transportation agreed to include the Dalton Highway leading to Alaska's North Slope as part of the National Highway System (NHS). This designation clears the way for federal money dedicated to the NHS to be used to maintain the road that leads to Prudhoe Bay from Fairbanks.

Formerly known as the North Slope Haul Road, the Dalton Highway was built during construction of the trans-Alaska pipeline system and named for post-World War II explorer James Dalton. The road was taken over by the state of Alaska in the 1980s and opened to general traffic last year. The road extends for a total 492 miles (792 km), from Fairbanks along the Steese and Elliot Highways to the Yukon River bridge (about 133 miles north of Fairbanks) and then on to Deadhorse (a 359 mile segment).

The Dalton Highway is the only consistent alternative to air transportation for shipping goods and supplies to the North Slope and the northern half of the pipeline corridor. This road also provides a vital link to the Arctic Ocean for military or environmental cargoes. Since its opening to the public last year, the highway is developing into a favorite route for tourists who want to see the arctic. All these uses will be benefitted by the increased maintenance of the Dalton Highway that federal funding through the NHS will allow.▼



Soils Aggregate Materials Inspection Training. Left to right: Allen McGinty, Curtis Wright, Detlef Morrison Brian Demoski, Ken Brownlow (instructor), Brian Sanford, Mack Wiehl, Roy Grantham.

Soils/Aggregate Materials Inspection Training
(continued from page 1)

nician. Alaska Test Methods for sieve analysis of fine and coarse aggregates, fine wash procedures, specific gravity test procedures, fractured particles, and Atterberg limits.

Ken Brownlow from DOT&PF's Northern Region Materials Lab developed and taught the week-long soils inspection classes. The Alaska T2 Program, which recently received ISTEA funding from Federal Highway Administration and Bureau of Indian Affairs to provide transportation technical assistance to Alaska Natives, coordinated the presentations. Jules Wright and Gil Guiterrez were the respective coordinators for Fairbanks and Nome. More course presentations are planned for the winter months. Areas interested in having the training should call Sharon McLeod-Everette at 907/ 451-5323.▼

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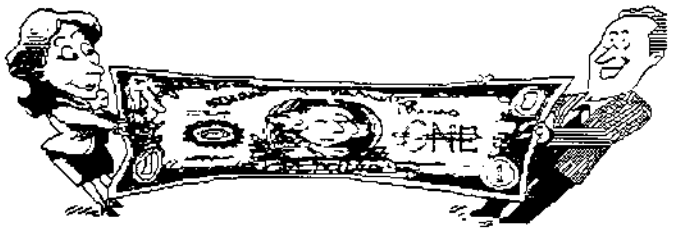
Note: Part II of Fred Korpinen's article, "Formulation of Road Service Areas," will appear in Technology for Alaskan Transportation, Fall 1995, Volume 20, Number 3.

A Practical Lesson in Dust Control Pallatives to Control Road Dust in the Mat-Su Borough

by Charles F. Kaucic, Project Manager, Matanuska-Susitna Borough, Palmer, Alaska

All of us have encountered the task of stretching limited road maintenance budgets in times of financial restraints. Early in 1994, the Matanuska-Susitna Borough

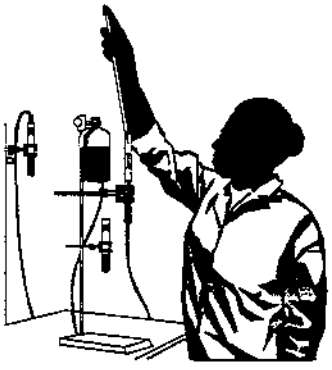


Public Works Department investigated the use of alternative dust control chemicals for areas that were typically treated with calcium chloride. This review proved to be quite timely because of unusually heavy snowfall on the east coast and the subsequent consumption of calcium chloride had depleted existing stocks as well as supplier inventories. The classical "balance bar" of economics had swung to the demand side and prices for calcium chloride rose sharply. The next step was to attempt to piggy back onto an existing state DOT contract with a chemical supplier. This was a possibility on paper but the distributor would not guarantee any product because of the calcium chloride "shortage." It might arrive or it might not. So, facing this "no guarantee" situation, the next step was to evaluate alternative dust control methods.

A call for help to the Alaska T2 Center proved to be quite productive. Through the T2 Center network, dust

ALASKA TRANSPORTATION TECHNOLOGY TRANSFER

control and road stabilization information was obtained from T2 Centers all over the U.S. Centers in Maine, Kansas, Arizona, Nevada, South Dakota, Iowa as well as the Mountain Plains Consortium of North Dakota, Colorado, Wyoming and Utah responded to the inquiry. Due to a number of leads, other agencies including Alberta Transportation and Utilities, the South Coast Air Quality Management District in California, Pennsylvania Department of Transportation, Alaska Department of Environmental Conservation, Alaska Department of Transportation and Public Facilities offices in Juneau, Palmer, and Fairbanks, the City of Haines, and the Municipality of Anchorage were contacted for practical information. Chemical manufacturers were also contacted for technical information.

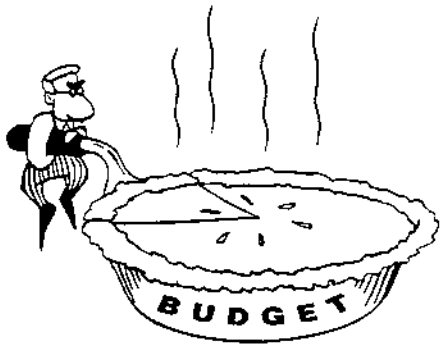


Sorting through and evaluating this information was a considerable task. Calcium chloride was used as a norm for comparative purposes. After analyzing the dust control alternatives, it was determined that the initial cost of chemical application would have to be allocated in future budgets. However, prior to budgeting, these unknown products would have to be field tested to provide evidence to persuade the traditional "calcium-disciples," and to justify and defend any budget increases.

International Enzymes, Inc., graciously provided enough product (Permazyme®) to treat one mile of gravel road. Permazyme® was utilized as a test project on the Willow Creek Parkway, a popular access to a state park and king salmon fishery. In order to comply with the base requirements for Permazyme®, fines were added to the gravel road. The road was properly cut 4" to 6" and bladed. The Permazyme® was diluted and applied with a water truck, then the road was shaped and graded. The Permazyme® reduced dust but was not as effective as calcium chloride. Also it did not stabilize the road as anticipated. The lack of suitable road material (dirty gravel) resulted in the permazyme's failure to bond. Thus Permazyme® was not as effective as it could have been with road materials better suited to its specifications.

Another product, BaseSeal® was tested on a one-quarter mile stretch of South Big Lake Road. The gravel road was shaped and bladed prior to the chemical being applied with a water truck. BaseSeal® was observed to hold dust down close to the road for a short period of time. During the application process, equipment prob-

lems may have contributed to a higher water dilution than desired—thus reducing its effectiveness.



In terms of costs, calcium chloride and chemical prices vary. A calcium chloride application rate of 4-6 tons per mile is used by the Matanuska-Susitna Borough on roads that are being treated for dust control. There are some chemicals that can treat one mile of a 22 foot top road for $1,000. Bulk shipments and bid timing can lower unit costs.

In retrospect, all the dust control information provided by the various sources suggested that the solution for dust control problems is pavement. Dust control products are useful for specific situations, soil types, and applications. The main lesson from this exercise is to make sure that the specifications of the gravel road materials are known and directly match the requirements of the chosen product. Once a model test is established and the results are positive, it will be much easier to illustrate the specific chemical's effectiveness and evaluate costs versus benefits.

We want to here about your trials and successes with dust control pallatives. To submit your article or ideas, contact our newsletter editor at (907) 451-5321.

For More Information

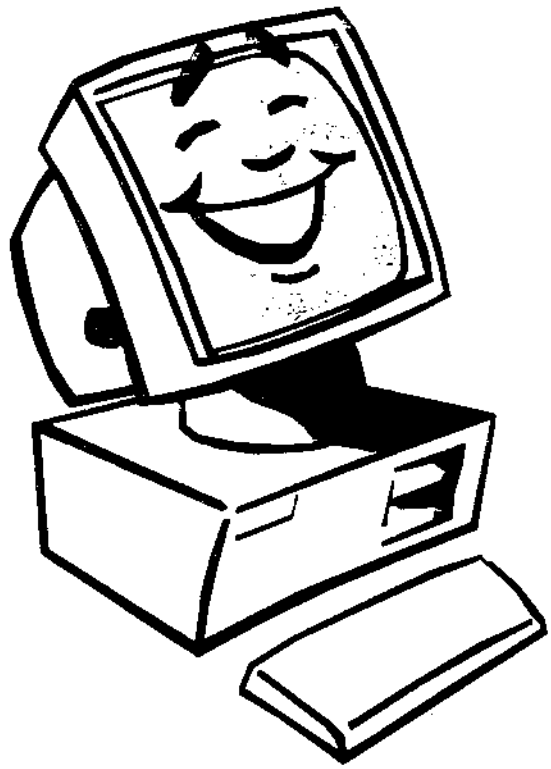
For back issues of our newsletter and inserts, or to get on our mailing list, write: Alaska Transportation Technology Transfer Program, Department of Transportation and Public Facilities, 2301 Peger Road, M/S 2550, Fairbanks, Alaska 99709-5399. For more information, you can also call (907) 451-5320.

INTERNET—The Network of Networks

Computers connected to each other are said to be *networked*, and are capable of exchanging data. There are many types of networks—local area networks (LAN), wide area networks (WAN), and municipal area networks (MAN), to name a few. It is possible to have connections among these networks and presently there are many interconnected networks. The largest and most all-comprising is Internet. It is accessible worldwide and has in its domain many small large networks.

What Comprises Internet?

The most popular feature of Internet —the one that draws the most users to it—is the *electronic mail* feature, often referred to as "E-mail." The E-mail feature allows one to send mail electronically provided the recipient has an Internet address (E-mail address). E-mail has certain advantages over conventional mail, such as it uses no paper, it is capable of automated group mailings, and it has very fast delivery (in most cases).



Newsgroups are probably the second most popular feature of Internet. A newsgroup is a forum where one can find and exchange information and opinions in on-line discussions about particular topics. One can post opinions to the newsgroup, and others can respond. There are newsgroups dedicated to countries, issues, software and hardware, sports events, news events, organizations—the list goes on.

Databases are also among the more important and useful features of Internet. There are hundreds of databases accessible via Internet. Popular are the "Bulletin Board Systems" and the "ftp sites." Bulletin Board Systems are facilities where one can get information, software, advice, and exchange notes with other users. File Transfer Program (ftp) sites are those where organizations have made available for public access software, information, data, music/songs, pictures, research materials, etc. These sites are not interactive like bulletin boards—they are repositories of information for people to access and download.

Platforms Supported

Internet is not restricted to any particular system or type of software and works on PCs, mainframes, IBMs, McIntoshes, UNIX stations, AX machines, etc. Each environment/system has its own software to access Internet. Once connected, it works the same for all. This autonomy across platform types is what makes its use universally possible.

How to Work with Internet

The best way to get help using Internet is probably to get a good book and start following it right away. The software you need to access Internet from your system can be recommended by your local computer vendor.

The best (and most economical) way to gain access to Internet is through an organization that provides it as a facility to its members. Ask the systems administrator of your agency to locate local organizations that provide remote access in your region—they can help you with your setup.

Once you connect to Internet, you will find it is a rich source of information and enjoyment.

Excerpted with permission from "Tropical Transfer" Hawaii Technology Transfer Project, Volume 3, Number 2, Summer 1994.

Internet and World Wide Web Tid Bits

Meet McTrans on the Internet

McLink, the McTrans electronic bulletin board system has recently been upgraded and is now available via Internet and World Wide Web. The new McLink offers several major enhancements with many more being considered for implementation in the near future. User feedback is encouraged especially during this transition period.

McLink now supports up to 14 simultaneous connections, including three via modem, offering two 28,800 bits per second (bps) (V.34) connections, and a third line supporting speeds up to 14,400 bps. The McLink telephone number remains unchanged at (904) 392-3225.

Users may log on via telnet at mclink.ce.ufl.edu and download files via ftp at ftp-mclink.ce.ufl.edu.

Anonymous ftp access is allowed to the public file areas, but we encourage users to register on McLink to gain access to bulletins, forum discussions, and software update information.

The McTrans e-mail address is mctrans@ce.ufl.edu and the World Wide Web URL is http://www-mctrans.ce.ufl.edu or http://www-mclink.ce.ufl.edu.

McLink is open to all and McTrans does not charge for usage. Direct Internet connection will often be the most economical, even when obtained from third party providers such as CompuServe®, Prodigy® and America Online™. Note that previous McLink users will be required to register as new users on first access to the new system.

Reprinted from the University of Florida Transportation Research Center "McTrans," June 1995.

PC-TRANS on WWW

The KUTC's PC-TRANS computer software and support service is now on the World Wide Web (WWW). WWW is the global information network which links together computers all over the world for the purpose of snaring information. It is also referred to as "The Information Superhighway."

KUTC's PC-TRANS Internet address is:

http://kuhub.cc.ukans.edu/~pctrans

Currently, a home page with general information about the program is available. Subdirectories are being developed with additional information that can be viewed or downloaded by WWW users.

All WWW users are encouraged to check out PC-TRANS and let them know what you think. Leave your comments as an e-mail message on their WWW address before you log off.

Adapted from the University of Kansas Transportation Center "KUTC Newsletter," Spring 1995.

Internet Info

Western Federal Lands Highway Division's Technology Development (TD) Team now has a presence on the Internet! An internet world wide-web server has been set up and the TD team has developed a home page for it. To view the home page, you need access to the Internet and a browser, such as Netscape or Mosaic. The address for the home page is:

http://www.wfl.fha.dot.gov/td/td.html

The newsletter, *Technology Development News*, is available from this web site. If you have suggestions for additional content, please contact Fred Rogers at: frogers@wfl.fha.dot.gov (Internet e-mail).

Adapted from Western Federal Lands Highway Division "Technology Development News," June 1995.

ITS Newsletter on WWW

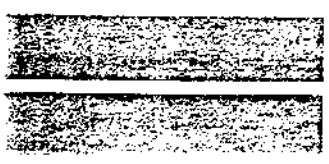
The Intelligent Transportation Systems (ITS) Research Centers of Excellence (RCE) Clearinghouse has published the first issue of its quarterly newsletter *Intelliscope*. The ITS RCE Clearinghouse will begin disseminating the newsletter and other RCE information over the Internet via the World Wide Web this summer. The ITS RCE Program's home page can be found using standard web browser software at the Uniform Resource Locator (URL) address of:

http://tti.tamu.edu/rce/

Questions and comments can be addressed to Mark Thomas, ITS RCE Clearinghouse Coordinator at:

Ph. (409) 862-2431

E-Mail: mthomas@tamu.edu



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1995/96 T2 CALENDAR OF EVENTS

DATE	EVENT	SPONSOR/CONTACT	LOCATION
Sep 18-19	Pacific Northwest Highway Incident Mgmt. Conference	Region 10 FHWA, Ed Fischer, (503) 326-3928	Red Lion at the Quay, Vancouver, Washington
Sep 20-22	SHRP and Traffic Safety on Two Continents	VTI, TRB, Dr. Richard Pain, (202) 334-2960	Prague, Czech Republic
Oct 2-3	Presentation Skills	IRWA, Keith Jost, (907) 269-4548	The Federal Building, Anchorage, Alaska
Oct 3-6	1996 Internat'l Symposium on Asphalt Emulsion Technology	AEMA, (410) 267-0023	The Omni Shoreham Hotel, Washington, DC
Oct 10-12	33rd Annual Road & Street Maint. Supervisor's School	Washington State University, (509) 335-3530	Red Lion Inn, Spokane, Washington
Oct 15-17	33rd Annual Road & Street Maint. Supervisors' School	Washington State University, (509) 335-3530	Bellevue Red Lion Inn, Bellevue Washington
Oct 18	Transitioning to Metric (Tentative)	FHWA/AGC/DOT&PF, (907) 465-6968	To be announced. Juneau, Anchorage, Fairbanks video teleconference.
Nov 1-3	NHI Course #15264: Landside Access for Intermodal Facilities	Alaska DOT&PF, (907) 451-5320	Regal Alaskan Hotel, Anchorage, Alaska
Apr 15-19, 1995	Alaska Transportation Week	DOT&PF/AGC/T2/UAF/ TRC/FHWA, (907) 451-5323	Sheraton Anchorage Hotel, Anchorage, Alaska

NHI = National Highway Institute

Meetings Around Alaska

Society	Chapter	Meetings Days	Location
ASCE	Anchorage Fairbanks Juneau	Monthly, 3rd Tues., noon Monthly, 3rd Wed., noon Monthly, 1st Wed., noon*	Northern Lights Inn Captain Bartlett Inn Breakwater Inn * except June-August
ASPE	Anchorage Fairbanks	Monthly, 2nd Tues., noon Monthly, 1st Fri., noon	West Coast International Inn Captain Bartlett Inn
ASPLS	Anchorage Fairbanks Mat-Su Valley	Monthly, 3rd, Tues., noon Monthly, 4th Tues., noon Monthly, last Wed., noon	Executive Cafeteria Federal Building Ethel's Sunset Inn Windbreak Cafe; George Strother, 745-9810
ITE	Anchorage	Monthly, 4th Thurs., noon	Sourdough Mining Company
IRWA	Sourdough Ch. 49 Arctic Trails Ch. 71 Totem Ch. 71	Monthly, 3rd Thurs., noon** Monthly, 2nd Thurs., noon# Monthly, 1st Wed., noon	West Coast Internat'l Inn **except July & Dec. Last Frontier Club #except December Mike's Place, Douglas
ICBO	Northern Chapter	Monthly, 1st Wed., noon	Zach's, Sophie Station
AWRA	Northern Region	Monthly, 3rd Wed., noon Brown Bag Lunch	Room 531 Duckering Bldg., University of Alaska Fairbanks, Larry Hinzman, 474-7331

To publicize an event in our calendar, contact us at (907) 451-5320.

Who's Who in Alaska's Transportation

George Levasseur, District Manager, Maintenance and Operations, South Central District, Department of Transportation and Public Facilities

George Levasseur, who is the District Manager of the South Central District of the Department of Transportation and Public Facilities, began his career with the Department of Highway-Valdez as a materials technicians in August 1974. After stints in construction, final review, and heavy equipment operations, he became the operations analyst for maintenance and operations. In 1983, he was promoted to superintendent for maintenance and operations in the Valdez area; he was promoted to his current position of District Manager in 1986. The size of the district was expanded to include the Tok area in 1993.

South Central Maintenance and Operations is responsible for approximately 10,000 square miles with boundaries that extend from Cordova to Delta and Gunsight Mountain to the Canadian border. Levasseur's duties include oversight of the maintenance management of 3,100 lane miles of roads; 17 airports, three of which have Federal Aviation Administration (FAA) certification; nearly 160 bridges; over 125 state buildings; and about $10 million worth of equipment. The district's strong point is the highly trained and dedicated people who work diligently to ensure that the area's roads, buildings, equipment, and airports are well-maintained. Levasseur comments, "It is a real challenge to keep the roads and airports open with the extreme amounts of snow that Valdez and Thompson Pass receive."

In addition to being a member of the Alaska T2 Program's Advisory Board, Levasseur has also had the privilege of serving as the chair of the Northern Region research subcommittee and as a member of the statewide research committee.

George Levasseur was born in Hibbing, Minnesota, September 16, 1952. He grew up in Chisholm, Minnesota, along the great iron ore deposits in the Mesaba Range.

After graduation from Chisholm High School in 1970, George attended the University of Minnesota, where he graduated with a B.A. in biology/chemistry. While attending the University of Minnesota, he meet his wife, Patty, who was also attending the university. They married and came to Alaska in July 1974 to honeymoon and seek their fortune. During that period, George went to work for the Department of Highway-Valdez. His wife, Patty, continues to teach English as a second language and tutors in the Adult Basic Education Department at Price William Sound Community College. "She loves helping people," states George.

Patty and George have been married for 21 years and have three children. Their oldest child, Phil, age 18, is a member of the U.S. Marine Corps; Michelle, 15, is a sophomore in high school; and their youngest, Lisa, is 12 and in the seventh grade. Family activities include fishing, hunting, traveling, alpine skiing, and exploring Prince William Sound by boat. "The schools are some of the finest in the state and people are very friendly and helpful," says George.

An active member of the community, George volunteers for United Way's Board of Directors in Valdez, serves as deacon of the First Baptist Church, and supports the Valdez Fisheries Development Association, a salmon hatchery, as the secretary-treasurer of the Board of Directors.

Commenting on the community, George remarks, "Valdez is a wonderful place to live and raise a family. Years ago, one had to drive through the Keystone Tunnel to come to Valdez. Patty says that on one of our trips, a rock fell on my head and I haven't wanted to move since!"

The couple plans to stay in Valdez for the rest of their careers. During their retirement years, Patty and George would like to do volunteer mission work.

METRICATION 1995
No. 7

Metrication of Steel Rebar: A Thorny Issue

by Gene Rehfield, P.E., State Metric Coordinator, Department of Transportation and Public Facilities

A controversy currently raging in the construction industry involves whether steel rebar will be produced in metric or English sizes. The question has huge cost implications for the steel manufacturing industry. The posturing of the steel industry, American Association of State Highway Transportation Officials (AASHTO), and the Federal Highway Administration (FHWA), is typical of the industry versus government perspectives and the rhetoric we will hear as the nation decides to accept or resist metrication.

The following excerpt was written by Dean Testa, chairman of the AASHTO Metric Task Force (reprinted by permission). Testa provides a concise outline of this issue and the choices that must be made.

From the *AASHTO Metric Task Force Memo*, June 5, 1995:

Last week, I was invited to Washington to attend meetings requested by the Concrete Reinforcing Steel Institute (CRSI) and the Steel Manufacturers Association (SMA) with the Department of Commerce and FHWA concerning metric conversion of steel reinforcing bars.

BACKGROUND/PROBLEM:

The state DOT's and AASHTO's metrication process has progressed to the point that many state DOT's are ready to let projects in metric units. The various Subcommittees of AASHTO have selected hard metric values for many products including reinforcing bars. The CRSI and the SMA, representing the reinforcing bar industry, previously endorsed AASHTO's recommendations for hard metric reinforcing bar sizes. AASHTO then adopted ASTM A615M for metric bar sizes. The AASHTO states, and the reinforcing bar industry agreed, that the reinforcing bar sizes included in ASTM A615M were the desired sizes to be used in metric projects. It should be further noted that ASTM A615M originally became an ASTM specification during the 1975 attempt to convert to metric.

During this year's meeting with the State Bridge Engineers in May 1995, CRSI representatives indicated that the industry has had a change in position and does not plan to furnish reinforcing bars in hard metric sizes. To satisfy the metric requirements, the industry proposes to roll reinforcing bars the same size as the present inch-pound system and label the bars with the present numbering system followed by an "M" for metric. The area, diameter, etc. would be shown as a soft conversion to indicate metric equivalents of the current industry standard.

INDUSTRY RATIONALE FOR PROPOSED CHANGE:

SMA and CRSI, on behalf of the U.S. industry, now oppose efforts to impose a hard metric value as the new standard for reinforcing bars and instead propose a soft conversion. There is no statutory requirement that agencies adopt a hard conversion.

The major concern of the industry is the cost associated with maintaining a dual inventory of metric and inch-pound reinforcing bars. The industry estimates it would cost $300 million per year to maintain the dual inventory, which includes the costs of producers, fabricators, and installers.

Federal procurement and federally funded state construction projects represent less than 30 percent of the total reinforcing bar consumption.

POSSIBLE DIRECTIONS:

1. Accept the industry recommendations and change the previously adopted AASHTO standards. *Note:* This will require the revision of all existing standard drawings to conform to any new standards adopted. Also, projects that have been designed already would have to be handled in a separate manner such as a "next size up" reinforcing bar substitution.

2. Continue with ASTM A615M, specifying reinforcing bars in hard metric units. *Note:* This will require the State DOT's either to accept the next larger reinforcing bar and place at the plan spacing or to allow a revision of the spacing of the reinforcing bars because the next larger reinforcing bar was used. It should be recognized that using the next larger reinforcing bar will increase the mass (weight) and these additional costs will be passed on to the State DOT's.

METRIC TASK FORCE POSITION ON THE ISSUE:

On June 5, 1995, members of the AASHTO Metric Task Force held a conference call to discuss which option would be in AASHTO's best interest. Though the Task Force did not make a decision on this issue, the Task Force had a meaningful discussion which it would like to share with the Chief Engineers.

Position Number 1 -- Accept soft conversion.

The AASHTO States have allowed the soft conversion on many of the products we expect to use in our business. Would it be unfair to expect the reinforcing bar industry to do differently? Many States update their standard drawings frequently and to make another update would not be an undue hardship. The AASHTO States must report to their respective legislative bodies, many of which are not fully supportive of metric conversion. Support further diminishes when increased costs are considered. Because there is no international standard for metric reinforcing bars, requiring a hard metric standard does not increase international uniformity or international trade. Finally, the States can

make the transition back to inch-pound reinforcing bars without an ASTM specification.

Position Number 2 -- Remain with hard conversion.

Using hard metric values allows the state DOTs to specify a more logical metric size bar and simplifies design. Recently revised standard drawings would not have to be changed again. Projects that have been let or are near the letting stage would not have to be treated differently than future projects. The state DOTs would be partnering with industry during the transition period by either accepting the next size reinforcing bar or adjusting the spacing after the project was let. This position encourages the ultimate conversion to metric in the U.S. whereas the reinforcing bar industry's proposal encourages the status quo. If the purpose of the 1988 Act is to lead the U.S. into the metric system, then using hard conversions must be given substantial consideration.

There are eight standard metric rebar sizes, as opposed to eleven sizes in the English rebar system; eliminated is the popular No. 4 (1/2") size. Considering the foregoing arguments, do you support the industry position, or that of more strict adherence to metrication?

Status of Conversion of Frequently Used Documents
NCHRP Project 20-40, *Conversion of AASHTO Documents to Metric Units*

This table provides the current status of the five documents that are being converted to metric units. The conversion of a sixth document, *Quality Assurance/Quality Control*, has been deferred until AASHTO has adopted a new version of the document.

Document	Status	Comments
US-5, U.S. Numbered Highways	Draft, metricized document was submitted to NCHRP for review and comments on 4/28/95.	The completed, metricized document will be submitted within one month of the receipt of comments and suggestions from NCHRP and AASHTO. Schedule of completion is dictated by this review time.
GSFEB, Guide Specs for Fatigue Evaluation of Existing Steel Bridges	Draft, metricized document was submitted to NCHRP for review and comments on 5/3/95.	The completed, metricized document will be submitted within one month of the receipt of comments and suggestions from NCHRP and AASHTO. Schedule of completion is dictated by this review time.
GDPS-4, AASHTO Guide for the Design of Pavement Structures	A draft of the metricized version of the text was submitted to the AASHTO representative on 5/18/95. Draft, metricized document is scheduled to be submitted to NCHRP by 8/1/95.	Complications with the graphics have been the primary cause of the delay in the development of the draft of this document. Contractor is awaiting a response from the AASHTO representative on the draft text. The development of the graphics is the current critical path element. Work is now progressing on these graphics.
HDG-2, Hydraulic Design Guidelines	The draft, metricized document is scheduled to be sumitted to NCHRP for review and comment before 7/1/95.	The completed, metricized document will be submitted within one month of the receipt of comments and suggestions from NCHRP and AASHTO. Schedule of completion is dictated by this review time.
MDM-1, Model Drainage Manual	Most of the metricized test and tables were submitted to the Task Force on Hydraulics and Hydrology for their May meeting. Due to additional technical updates identified by the Task Force and delays in the development of graphics, a revised date of September 30, 1995, has been set for submission of the draft, metricized document to NCHRP for review and comment.	The receipt of the addtional technical updates from the Task Force will be a determining factor in the completion schedule to the metricized document. There are over 100 nomographs which are causing some conversion troubles. The type of comversion proposed was not acceptable to the Task Force. The conversion desired will require additonal time. The development of the graphics is likely to be the current critical path element. An additional graphic person has been added to accelerate the process.

If you have any questions about these or other documents that are to be converted, please contact the AASHTO Metrication Clearinghouse at (409) 845-5770 or fax (409) 845-9848.

Reprinted from the "AASHTO Metrication Clearinghouse Newsletter," Summer, 1995.

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Construction Post Mortems in Alaska's Central Region

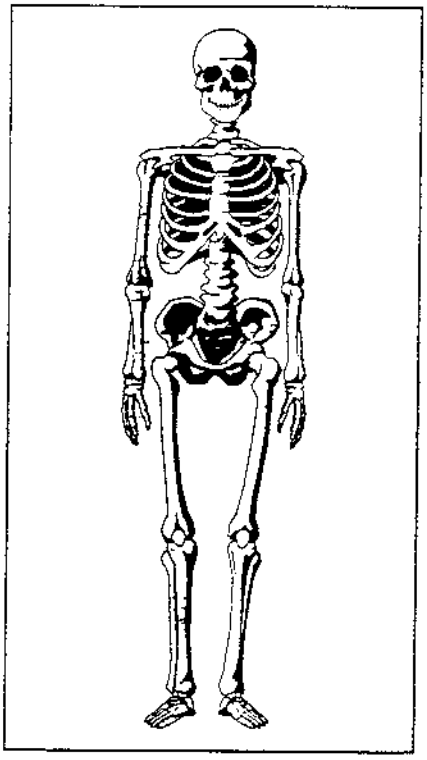
by Michael R. Tooley, Highway Construction Engineer, Department of Transportation and Public Facilities

Construction *Post Mortems* are a process for critiquing all aspects of the work done on a road construction project and recommending actions to improve future projects. Constructive criticism is sought from everyone involved in the project, from its inception through its completion. Alaska's Central Region began critiquing projects about 15 years ago, when Dean Redick, Regional Engineer, threw up his hands in disgust and said, "... the Region divided could not survive..." because the road designers did not talk to the road constructors! Redick then reserved the room above the vehicle maintenance repair shop, called his people together, locked the doors, and held all phone calls for the next three days. The ground rules were simple: no holds were barred, but no grudges were to be kept. This was the first of what came to be known as the Annual Bitch Session, where constructors complained about poor designs, designers complained about constructors that would not build according to plan, environmentalists complained about the wanton destruction, traffic complained about the signage, and the utility guys complained about the lack of coordination on all fronts. The result was a general clearing of the air, with everyone having their say about the problems they had faced during the past year. In most cases, everyone left the Annual Bitch Session with a better understanding of each other's problems. Redick worked to insure that the good ideas that emerged from the sessions were incorporated into future operations.

POST MORTEM

Post-mor-tem (pōst môr'təm) *adj.* [Latin, after death] 1. happening, done, or made after death 2. a detailed examination or evaluation of some event just ended.
-WEBSTER's New World Dictionary

Post-mor-tem (pōst môr'təm) *n.* [DOT, after project] 1. a detailed discussion or critique of the work performed by all parties involved with the construction of a roadway.
-Highway Construction, Central Region



After the consolidation of the Department of Transportation and Public Facilities (DOT&PF), the Annual Bitch Session fell out of favor with a later Regional Director, and the functional groups were left to drift apart again. In the early 1990's, Jerry George, Central Region Chief Construction Engineer, resurrected the idea. George set up smaller *project meetings* between the DOT&PF personnel and the contractor who had worked on each project. After the project meetings were completed, everyone attended a giant summary meeting to go over what had been learned from the season's projects and assign people to resolve any issues that were unresolved in the project meetings.

This process has evolved into the Central Region's current system called *Construction Post Mortems*. At

the end of the construction season, each Project Engineer schedules a meeting with the prime contractor and his key people, principle subcontractors, and any interested suppliers or fabricators. Those in attendance from DOT&PF include the project staff, Construction Materials Engineer, the Designer of Record, and representatives from Traffic and Environmental DOT&PF sections. The invitation is also sent to Maintenance and Operations, and anyone else that may have an interest, such as local government officials. The purpose of the meeting is defined as an unofficial discussion and critique of the project with special emphasis on:

- ☺ what worked well and should be continued,
- ☺ what was not included in the project that should be considered for future projects, and
- ☹ what did not work and should NEVER be tried again.

Lots of good, insightful ideas are exchanged by people with a great deal of practical knowledge about the construction project and an intimate understanding of the site characteristics. At the end of the meeting, all participants should have had the opportunity to present their ideas about the good and bad aspects of the project and everyone should leave as friends.

After this meeting, the Construction Project Managers are responsible for summarizing the comments, and then the Highway Construction Engineer will consolidate the comment summaries into prioritized *Top Ten Lists* by the type of action required:

- ☞ Action by the Highway Construction section
- ☞ Action by others within the Region
- ☞ Action on a statewide level

The input from the contractors has been very useful and they have a positive attitude toward the *Post Mortem* process. Initially, the contractors were reluctant to attend, perhaps thinking DOT&PF was just giving lip-service to their concerns and ideas. But as the word got out that it was truly constructive criticism that was wanted, more and more contractors accepted the invitation. Some designers were also reluctant to attend at first, but they also came to realize the benefits of a positive critique.

Last year at the Annual Construction Engineer's Meeting, all the regions got together and went over the lists developed during their *Post Mortems*. This comparison turned up several problems common to more than one region, and a few problems that had already been solved in other regions. This statewide communication on *Construction Post Mortems* proved quite valuable.

Nowadays they call this *Quality Initiative*, but in Central Region we believe that it just makes good business sense to learn from everyone's mistakes, and we want to hear from every stakeholder that has an interest in our work product.

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NEW PUBLICATIONS AVAILABLE FOR LOAN ___ 1995

No. 39

Place a check by the publications you wish to borrow.

____ **Binder Characterization and Evaluation Volume 1.** ID-1308, SHRP-A-367, Strategic Highway Research Program, National Research Council, May 1994, 152pp.

____ **Binder Characterization and Evaluation Volume 4: Test Methods.** ID-1309, SHRP-A-370, Strategic Highway Research Program, National Research Council, May 1994, 193pp.

____ **Development of SHRP Asphalt Research Program Climatic Databases.** ID-1291, SHRP-A-685, Strategic Highway Research Program, National Research Council, April 1994, 65pp.

____ **Driver Performance, Pedestrian Planning, and Bicycle Facilities.** ID-1313, TRR 1168, Transportation Research Board, National Research Council, 1988, 91pp.

____ **Early Analyses of LTPP General Pavement Studies Data: Data Processing and Evaluation.** ID-1290, SHRP-P-684, Strategic Highway Research Program, National Research Council, May 1994, 264pp.

____ **Evaluation of Pavement Joint Performance.** ID-1305, Final Report, Job No. 14474(0), Ohio University, Center for Geotechnical and Groundwater Research, January 1994, 432pp.

____ **Fatigue Response of Asphalt-Aggregate Mixes.** ID-1292, SHRP-A-404, Strategic Highway Research Program, National Research Council, June 1994, 309pp.

____ **Fatigue Strength and Stiffness of Reinforced Concrete Bridge Desks.** ID-1317, Final Report - FHWA/OH-93/016, The Ohio Department of Transportation and Federal Highway Administration, by Philip C. Perdikaris, Michael F. Petrou, and Aidong Wang, March 1993, 240pp.

____ **Field Validation of the Environmental Conditioning System.** ID-1299, SHRP-A-396, Strategic Highway Research Program, National Research Council, May 1994, 194pp.

____ **Guide to Metric Conversion.** ID-1300, AASHTO, 1993, 106pp.

____ **Implementation of the Video Image Processing Technique for Evaluating Pavement Surface Distress in the State of Ohio.** ID-1304, Final Report No. FHWA/OH-94/005, Ohio Department of Transportation, by J.A. Acosta, J.L. Figueroa, and R.L. Mullen, May 1994, 257pp.

____ **An Improved Displacement Snowplow.** ID-1298, SHRP-H-673, Strategic Highway Research Program, National Research Council, May 1994, 85pp.

____ **Laboratory Aging of Asphalt-Aggregate Mixtures: Field Validation.** ID-1310, SHRP-A-390, Strategic Highway Research Program, National Research Council, April 1994, 204pp.

____ **Landscape Inventory and Management System Technology for Highway Transportation.** ID-1318, FHWA-AZ94-318-1, Arizona Department of Transportation, by Harlow Landphair, Terry Larsen, and Cliff Perry, April 1994, 94pp.

____ **Low-Temperature Cracking: Binder Validation.** ID-1311, SHRP-A-399, Strategic Highway Research Program, National Research Council, June 1994, 106pp.

____ **Low-Temperature Cracking: Field Validation of the Thermal Street Restrained Specimen Test.** ID-1295, SHRP-A-401, Strategic Highway Research Program, National Research Council, June 1994, 116pp.

____ **Low-Temperature Cracking: Test Selection.** ID-1294, SHRP-A-400, Strategic Highway Research Program, National Research Council, June 1994, 106pp.

____ **Ohio Transportation Technology Transfer: Shaping Its Future.** ID-1307, The Ohio State University, Office of Continuing Education, December 1993, 61pp.

____ **Potential Safety Applications of Advanced Technology**, ID-1303, FHWA-RD-93-080, USDOT/FHWA, January 1994, 310pp.

____ **Predicting Performance of a Long-Span Precast Concrete Arch Culvert**, ID-1316, Final Report, Project No. 93438, The University of Dayton, School of Engineering, by Dr. M. Zoghi, January 1994, 23pp.

____ **Riprap Design**, ID-1314, by Stephen T. Maynord and Steven R. Abt, *Journal of Hydraulic Engineering*, Volume 115, Number 7, American Society of Civil Engineering, July 1989, pp. 937-949.

____ **Riprap Stability Results from Large Test Channel**, ID-1315, by Stephen T. Maynord, *Hydraulic Engineering*, pp. 257-262.

____ **SHRP-LTPP Overview: Five-Year Report**, ID-1297, SHRP-P-416, Strategic Highway Research Program, National Research Council, June 1994, 315pp.

____ **Stage 1 Validation of the Relationship Between Asphalt Properties and Asphalt-Aggregate Mix Performance**, ID-1293, SHRP-A-398, Strategic Highway Research Program, National Research Council, June 1994, 235pp.

____ **Thin Layer Asphalt Concrete Density Measurements Using Nuclear Gages**, ID-1306, FHWA-EP-11-003, Written for FHWA Experimental Project #11, Oregon Department of Transportation, Engineering Services Section, Research Unit, March 1989, 28pp.

____ **Use of Shredded and Granulated Tire Rubber as an Insulating Fill in Road Construction**, ID-1301, Draft Final Report, by Dr. Jiong Shao and Dr. John P. Zarling, May 30, 1994, 26pp.

____ **Using Shredded Waste Tires as a Lightweight Fill Material for Road Subgrades**, ID-1302, Report Number 94-10, Minnesota Department of Transportation, Materials Research & Engineering, 29pp.

____ **Water Sensitivity: Binder Validation**, ID-1312, SHRP-A-402, Strategic Highway Research Program, National Research Council, May 1994, 104pp.

____ **Water Sensitivity of Asphalt-Aggregate Mixes: Test Selection**, ID-1296, SHRP-A-403, Strategic Highway Research Program, National Research Council, June 1994, 183pp.

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NEW VIDEOS AVAILABLE FOR LOAN _____ 1995

No. 39

Place a check by the videotapes you wish to borrow.

____ **Deadly Detour--Barricade Safety II.** ID-284. Safety Shorts. 1991. 7 mins. Driving around road construction and barricades is not only tricky, it can be dangerous to both drivers and road crews. This video shows ways to get through the "Roadwork Maze" unscratched.

____ **Tractor Safety.** ID-285. Safety Shorts. 1993. 5 mins. Tractors are "Power on Wheels." Power that can help, injure, or kill you. This five minute refresher is designed to help tractors make your life easier - not shorter.

____ **A Traffic Plan to Live By: City Maintenance Operations.** ID-297. Traffic Education and Consulting Services. 1991. 14:36 mins. Includes leaders and participants guides.

____ **A Traffic Plan to Live By: Devices.** ID-288. Traffic Education and Consulting Services. 1991. 20 mins. Includes leaders and participants guides.

____ **A Traffic Plan to Live By: Flagging.** ID-293. Traffic Education and Consulting Services. 1991. 13:46 mins. Includes leaders and participants guides.

____ **A Traffic Plan to Live By: Intersection Work.** ID-286. Traffic Education and Consulting Services. 1991. 24mins. Includes leaders and participants guides.

____ **A Traffic Plan to Live By: Introduction to Low Speed Traffic Control.** ID-295. Traffic Education and Consulting Services. 1991. 11:45 mins. Includes leaders and participants guides.

____ **A Traffic Plan to Live By: Low Speed Lane Closures.** ID-292. Traffic Education and Consulting Services. 1991. 14:40 mins. Includes leaders and participants guides.

____ **A Traffic Plan to Live By: Parking Lane/Shoulder Work.** ID-291. Traffic Education and Consulting Services. 1991. 11:47 mins. Includes leaders and participants guides.

____ **A Traffic Plan to Live By: Pedestrian.** ID-296. Traffic Education and Consulting Services. 1991. 12:00 mins. Includes leaders and participants guides.

____ **A Traffic Plan to Live By: Protection of Locators and Surveyors.** ID-287. Traffic Education and Consulting Services. 1991. 8 mins. Includes leaders and participants guides.

____ **A Traffic Plan to Live By: Street Closures.** ID-294. Traffic Education and Consulting Services. 1991. 15:30 mins. Includes leaders and participants guides.

____ **A Traffic Plan to Live By: Traffic Control Procedures.** ID-289. Traffic Education and Consulting Services. 1991. 13:46 mins. Includes leaders and participants guides.

____ **A Traffic Plan to Live By: Unattended Work Site.** ID-290. Traffic Education and Consulting Services. 1991. 14:30 mins. Includes leaders and participants guides.

____ **Trenching Safety -- I.** ID-283. Safety Shorts. 1991. 8mins. This video provides some basic guidelines to follow to ensure a safe trenching job.

ADDITIONAL PUBLICATIONS AVAILABLE FOR LOAN

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____ **An Analysis of Guardrail and Median Barrier Accidents Using the Longitudinal Barrier Special Studies (LBSS) File Volume I: Final Report.** ID-1328. FHWA-RD-92-098. USDOT/FHWA. February 1994. 88pp.

____ **Asphalt Pavement Evaluation and Overlay Design Guide**, ID-1319, International Society for Asphalt Pavements, December 1989, 15pp.

____ **The Clemson Beaver Pond Leveler**, ID-1330, AFW Leaflet 1, Rev. November 1992, Department of Aquaculture, Fisheries, and Wildlife.

____ **Electrochemical Chloride Removal and Protection of Concrete Bridge Components: Laboratory Studies**, ID-1320, SHRP-S-657, Strategic Highway Research Program, National Research Council, June 1993, 201pp.

____ **Minimum Retroreflectivity Requirements for Traffic Signs**, ID-1322, FHWA-RD-93-077, USDOT/FHWA, October 1993, 67pp.

____ **Minimum Retroreflectivity Requirements for Traffic Signs: Summary Report**, ID-1323, FHWA-RD-93-152, USDOT/FHWA, October 1993, 21pp.

____ **Part VI Standards and Guides for Traffic Controls for Streets and Highway Construction, Maintenance, Utility, and Incident Management Operations**, ID-1325, Part VI of the Manual on Uniform Traffic Control Devices (MUTCD), FHWA-SA-94-027, 1988 Edition of MUTCD, Revision 3, USDOT/FHWA, September 3, 1993, 195pp.

____ **Planning, Design, and Operation of Transportation Facilities in Houston, Texas: A Summary of Activities**, ID-1331, Texas Transportation Institute, TTI:7-1941.

____ **A Preliminary Laboratory Investigation of Passive Railroad Crossing Signs**, ID-1324, FHWA-RD-93-153, USDOT/FHWA, December 1993, 26pp.

____ **Spectrum Needs for Intelligent Vehicle-Highway System Application**, ID-1329, Transportation Research Circular, Number 428, June 1994, 46pp.

____ **A System for Calibration of the Marshall Compaction Hammer**, ID-1327, FHWA-RD-94-002, USDOT/FHWA, July 1994, 147pp.

____ **Transit Planning and Research Programs: Fiscal Year 1993 Project Directory**, ID-1321, FTS-TTS-5-94-1, USDOT, Federal Transit Administration, Office of Technical Assistance and Safety, April 1994, 85pp.

____ **VTI Annual Report 1992/93**, ID-1326, Research for Mobility, VIT, 1993, 22pp.

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New Publications in the T2 Library 1995

No. 3

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Examples of Statewide Transportation Planning Practices. FHWA-PD-95-018. Balloffet and Associates, Inc.

Although all States are working hard to prepare plans that meet ISTEA requirements as well as their own needs, some have employed particularly innovative or unique approaches that may be of interest and benefit to other states. This report presents examples of innovative planning approaches from several states that meet or exceed ISTEA requirements. In addition these examples were selected for

- Ease of Update/Maintenance.
- Transferability/Applicability to Other States, and
- Level of Effort Required to Effect the Process/ Approach.

The examples of innovative planning approaches are presented in eight categories:

- Coordination of Statewide and Metropolitan Planning
- Form and Content of Statewide Transportation Plans and Improvement Programs
- Comprehensive Transportation Planning
- Management Systems
- Public Involvement
- Social, Economic and Environmental Issues
- Transportation Systems Management (TSM) and Operations
- Investment and Finance Issues

Background of SUPERPAVE Asphalt Mixture Design and Analysis, FHWA-SA-95-003, R. McGennis, R. Anderson, T. Kennedy, and M. Solaimanian.

This manual represents the first formal training document on the complete series of SUPERPAVE asphalt mixture design and analysis test equipment and procedures. It provides a better understanding of the underlying theory behind asphalt mixture design and analysis, as well as teaching how to perform each of the new procedures.

SUPERPAVE Asphalt Mixture Design Illustrated Level 1 Lab Methods, FHWA-SA-94-004, R. Anderson, and R. McGennis.

This manual provides sequential, illustrated steps for performing the SUPERPAVE test procedures on asphalt mixtures, level 1 design. It is a self-contained laboratory reference document on those procedures.

Evaluation of Rural Guide Signing: Second Year Activities and Preliminary Recommendations, FHWA/TX-95/1373-2, H. Hawkins, Jr., R. Bartoskewitz, and D. Fenno.

The author's describe the second year of a three-year study evaluating the use of guide signs on conventional highways in rural areas. This report includes: 1) a survey of signing practices in several states, 2) a survey of driver information needs, 3) the evaluation of alternative route markers for Farm-to-Market highways, 4) evaluation of signs combining route and destination information on a single sign, 5) field evaluations of drivers use of conventional guide signing, and 6) preliminary recommendations for the use of conventional guide signing.

Reliability of AASHTO Design Equation for Predicting Performance of Flexible and Rigid Pavements in Ohio, FHWA/OH/95/006, O. Abdulshafi, H. Mukhtar, and B. Kedzierski.

This report describes a test of the AASHTO empirical equations for predicting the performance of pavements. Continuous traffic data collection was accomplished by Weigh-In-Motion devices. Pavement Serviceability Index (PSI) was measured by the Ohio noncontact profilometer. Core samples were obtained and several laboratory tests were conducted to determine the as-constructed material properties and variability of the design input parameters. Comparison of predicted and observed

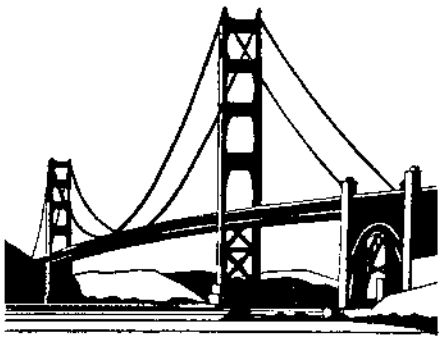
performances based on approximately four years of data indicated that the AASHTO equation does not predict the performance of flexible pavements in Ohio. The predicted and observed performance for rigid pavement sites were essentially the same, that is, no change in the observed and predicted PSI. However, these observations were based on short term performance data.

Physical and Access/Locational Characteristics of Remainders of Partial Takings Significantly Affecting Right-of-Way Costs, FHWA/TX-94/1390-1, J. Buffington, M. Chui, J. Memmott, and F. Saad.

Highway right-of-way costs have accelerated in recent years, especially in suburban and urban areas of Texas. This study seeks to determine which remainder characteristics significantly affect right-of-way costs. The findings indicate TxDOT can control and reduce right-of-way costs by 1) being able to closely monitor the appraisals of remainders of partial takings, 2) working closely with the TxDOT planning and design officials to avoid creating remainder properties that contribute significantly to right-of-way costs, and 3) supporting recommended changes in the state right-of-way acquisition laws that would significantly reduce right-of-way costs.

Overload Permit Procedures, FHWA/TX-94/1266-4F, P. Keating, J. Noel, S. Litchfield, M. Mattox, and E. White.

This document defines criteria for issuing permits for overweight vehicles passing over H15, H20 and HS20 highway bridges in the state of Texas. The approach used analyzes the discrete point on the bridge where overstress is most likely to occur as prescribed by AASHTO in the *Standard Specifications for Highway Bridges* and the *Maintenance Manual for the Inspection of Bridges*. Two formulae for each bridge type, a general formula, and a bridge specific formula, have been developed to limit the group axle weight on simple span bridges. These formulae better estimate the design strength of bridges typical to Texas highways by incorporating the effect of span length, span type (simple supported or continuous), and type of bridge (slab, concrete or steel stringer). Therefore, the routing of permit loads, especially "superheavy" vehicles, can be performed with consideration given to specific bridges on an intended route.



Temporary Erosion Control Selection—TAMUBMP Computer Program, FHWA/TX-95/1379-2F, S. Godfrey, J. Long, and J. Rosson.

This document contains the user information for the PC-based TAMUBMP computer program. The program is used for selecting appropriate temporary erosion (and sediment) control measures for construction projects and generating stormwater practice prevention plans (SW3P).

Temporary Erosion Control Measures Design Guidelines for TxDOT, FHWA/TX-95/1379-1, S. Godfrey and J. Long.

In recent years there has been a proliferation of erosion and sediment control products and methods developed by the erosion control industry. Industry standards have not kept up with the rapid changes. This study was initiated to develop design guidelines that would complement TxDOT's existing efforts and provide guidance for further erosion and sediment control research. A working glossary of erosion and sediment control terms is presented along with details of erosion and sediment control measures from several sources. The researchers developed a PC-based computer program (TAMUBMP) that helps the designer to select the appropriate best management practice, and has report generation capability for the stormwater pollution prevention plans (SW3P).

Feasibility Study for Hydraulic Modeling Facility for Scour Problems, FHWA/TX-95/1408-1F, F. Ting, J. Briaud, S. Gudavalli, and S. Perugu.

The feasibility of building a large scale scour modeling facility to help evaluate bridge scour problems in Texas is studied. The fundamental laws of hydraulic and soil modeling are detailed, and problems of modeling clay soils are discussed. Case histories are used to calculate the necessary size of scaled models. The new facility is designed and the cost is estimated. Finally, the advantages and disadvantages of building the new facility versus using existing scour modeling laboratories in the USA are outlined.

Motorist Understanding of Traffic Control Devices: Study Results and Recommendations, FHWA/TX-95/1261-4, H. Hawkins, Jr., K. Womack, and J. Mounce.

This report describes the techniques used and findings obtained in a survey of 2,414 Texas drivers about their understanding of 52 traffic control devices. Recommendations include changes to the Texas MUTCD, changes in TxDOT practices, revisions of the *Texas Drivers Handbook*, changes in the driver education/driver safety course curriculums, a public information campaign, and the conduct of additional research.

An Annotated Bibliography of Transportation-Related Air Quality Documents: 1989-1994, FHWA/TX-95/1279-8, A. Stephenson and G. Heath.

This bibliography represents the collection of transportation-related air quality materials collected by the Texas Transportation Institute in support of research for TxDOT and FHWA. The bibliography is arranged by subject and contains abstracts for most of the citations. An author index is included. Information is also given on where to obtain some of the federal documents listed.

The Use and Effects of Studded Tires on Oregon Pavements, Masters Thesis, B. Brunette.

This report updates a similar report published in 1974 by ODOT. Tasks performed, specific to Oregon, included studded tire use surveys, rut depth measurements, estimation of studded tire traffic, pavement wear analysis and damage cost estimation. A thorough literature review on studded tire effects is included as are the results of a studded tire practices questionnaire, undertaken to compare Oregon studded tire practices with other parts of North America.

Several alternatives are discussed to reduce the damage caused by studded tires in Oregon. These include a reduced time of stud use, lightweight studs, user fees, more stud resistant pavements, a public education program, or a ban on studded tires. Since most of these alternatives involve legislation, the most important of these options, in the author's opinion, is the public education program.

Survey of: Alternative Road Deicers, FHWA-SA-95-040, Resource Concepts, Inc.

Due to increasing concerns regarding the environment and the potential impacts associated with the practice of ice and snow control, Nevada DOT and California DOT have committed to the location and identification of compounds that may be used as roadway deicers. This study focuses on "alternative" deicing compounds that contain no more than a trace (1-2%) of sodium chloride. The objectives of this study are:

1. To identify (through a worldwide literature search) alternative roadway deicing compounds for potential use on Nevada and California state highways;

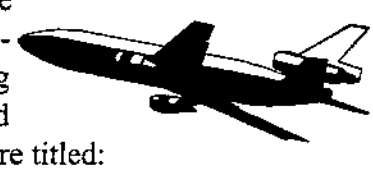
2. To evaluate performance, operational characteristics, roadway impacts, and cost considerations associated with each alternative deicing compound; and

3. To review potential adverse environmental effects associated with the use of each alterative deicing compound.

This study found that no single compound or group of compounds exhibit all the positive characteristics desired in a roadway deicing compound. Evaluation matrices and descriptions are provided for both commercially available and noncommercially available alternative deicers.

The 4th International Conference on the Bearing Capacity of Roads and Airfields - Papers from the Norwegian Road Research Laboratory,

Publication no. 79, Norwegian Public Roads Administration. This publication contains seven papers that were presented at the 1994 International Conference on the Bearing Capacity of Roads and Airfields. The papers are titled:



· The Use of Dynamic Cone Penetrometer (DCP) for Road Strengthening Design in Norway

· Structural Design of Road Strengthening in Norway

· Dynaflect and FWD Quality Assurance of Bearing Capacity Measurements - Annual Comparison Measurements Between Different FWDs and Dynaflects

· Bearing Capacity Register Based on Pavement Performance Data

· Backcalculation of In-depth Deflection Measurements with Linear Theory and Stress Dependent Material Models

· Bearing Capacity and Performance of Pavement Structures Insulated with Polystyrene Boards

· Increased Bearing Capacity and Increased Pavement Service Life Using Steel Reinforcements in Asphalt Pavements

Alaska DOT&PF Research Reports

Longitudinal Cracking of Roads and Frost Heaves, INE/TRC 94.23, T. Kinney.

Ten road sections exhibiting longitudinal cracking and/or frost heaving were chosen for observation during the summer of 1993 and the winter of 1993-94. Instrumentation for three-dimensional measurement of the road surface and embankment was installed at each site, but there was not time for installation of temperature monitoring instrumentation before freeze-up. The report presents the data from repeated surface surveys at each site and recommendations for continued study of these road sections.

Fatigue Properties of Rubber Modified Pavements, SPR-UAF-93-09B, L. Raad, S. Saboundjian, and X. Yuan.

ISTEA mandates for the use of crumb tire rubber in pavements would require Alaska to use about 1,000 tons of rubber per year by 1997. A number of pavements using crumb rubber modifiers have been built in Alaska and have been in service for periods of 8 to 15 years. Knowledge of the fatigue behavior of rubber modified pavements in Alaska is necessary for their future design and construction.

This report presents results of a study to determine the fatigue behavior of rubber modified pavements in Alaska in comparison with conventional asphalt concrete pavements. Laboratory studies were conducted on field specimens using the flexural fatigue test in the controlled-displacement mode. Tests were performed at 72°F and 40°F. Tested materials include 1) conventional HMA with AC 2.5 and AC 5; 2) PlusRide RUMAC with AC 5; 3) asphalt-rubber concrete with AC 2.5 (wet process); and 4) rubberized asphalt-rubber concrete with AC 2.5 (wet/dry process).

Test results show that the rubberized mixes exhibit significant improvement in terms of their resistance to fatigue in comparison with conventional asphalt concrete mixes.

The Cold Regions Infrastructure

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All prospective authors are invited to submit abstracts for papers in all areas of cold regions engineering including:

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Several technical and general interest field tours are being planned to include the northern Alaska oil fields, the permafrost tunnel, the Trans-Alaska Pipeline and local power and utility systems.

Abstract and paper deadlines are:

500 word abstract-	August 1, 1995
Acceptance notification-	September 15, 1995
Submittal of manuscript-	January 15, 1995
Final notification-	March 1, 1996
Submittal of camera ready copy-	May 1, 1996

For further information, please contact the following at the conference address, phones or e-mail:

Conference Chair: Dr. F. Lawrence Bennett, PE

Program Chair: Dr. Robert F. Carlson, PE

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CALL FOR PAPERS
ON
HIGHWAY REVENUE TAX EVASION

THE TRANSPORTATION RESEARCH BOARD
COMMITTEE ON TAXATION AND FINANCE (A1A01)

Invites the submission of papers intended for presentation at the January 1996 Annual Meeting to be held in Washington, D. C., and/or for publication by the Transportation Research Board.

Highway revenue tax evasion is a significant and recognized national issue that is taking on renewed emphasis at all levels of government as states look to ways to bring in additional revenues to meet growing transportation infrastructure needs. Further, the competitiveness of businesses paying taxes is impacted by evasion, contributing to inequities in the tax system. Estimates of evasion vary widely with most of the research efforts directed to fuel tax evasion, although evasion of other-highway related taxes is also acknowledged as a serious problem. In a 1994 study, the Federal Highway Administration(FHWA) estimated that fuel tax evasion was costing the federal government about $1.6 billion dollars per year in lost highway user revenue and the 50 states are losing at least a billion dollars.

Papers may address any aspect of tax evasion, but we particularly encourage submission on the following topics:

- $ Countermeasures taken by states to curtail evasion and their effectiveness
- $ Technology opportunities to enhance collection efforts
- $ Impact of changing the point of taxation
- $ The International Experience in mitigating tax evasion
- $ Methods to detect tax evasion
- $ Potential legislative initiatives to reduce evasion

Papers should be submitted in accordance with standard TRB procedures. Copies of the offer form and guidelines (1995 Information for Authors and Speakers) may be obtained by calling the Transportation Research Board at (202) 334-2966. If you have any questions, you may call Suzanne Sale at (602) 255-7441 or Norman Wuestefeld, Chairman of A1A01, at (203) 865-2191.

Seven copies of the paper and abstract, along with the offer form, (please mark your paper offer form "A1A01 Call for Papers") must be submitted to the TRB, 2101 Constitution Avenue, N.W., Washington, D. C. 20418 by August 1, 1995, with a copy to Norman Wuestefeld, Executive Vice President, Wilbur Smith Associates, P.O. Box 9412, New Haven, CT 06534.

Information Packet
1995 Surface Transportation Initiative
Alaska Department of Transportation and Public Facilities

Introduction

On June 6, 1995, Governor Knowles announced a new surface transportation plan, affecting roads, trails, ferries and transit, for Alaska's future. The new plan (copy attached) will focus transportation investments toward four broad categories of spending:

- Bring Alaska's National Highway System (intercity, statewide and Alaska Marine Highway System or AMHS routes) up to standard (approximately $120 million a year).
- Develop a Community Transportation Program (CTP) that creates partnerships with local governments to build projects that serve local needs (approximately $80 million a year).
- Support the construction of new roads and projects that directly contribute to the economic development of Alaska (annual funding for this program is included in the Community Transportation Program); and,
- Introduce a Trails and Recreational Access for Alaska (TRAAK) Program to improve access and recreational opportunities ($10 to $20 million a year).

Making the Plan Work

In order to begin this new plan, the following changes were made in the project selection process. Starting in July 1995 the department announced a new project selection process. This new process incorporates the following provisions:

- Detailed and specific selection criteria for ranking projects.
- A priority on shared costs, both capital and maintenance.
- Equal opportunity for highway and non-traditional transportation modes.
- Further priority to projects that are environmentally sound, enhance economic growth and serve communities and neighborhoods.

What the New Process Entails

Project selection involves one of two approaches. The department selects projects for the National Highway System based upon existing conditions, traffic levels and logistical considerations. The result of this first approach is a new long-term *Alaska-National Highway System Plan.* It identifies the proposed sequence and timing of projects that bring Alaska's major highways and ferry system to current standards.

The second approach includes all other categories under the new transportation plan. The department has prepared new evaluation standards and criteria for five different types of surface transportation facilities (i.e., TRAAK, Transit, Alaska Marine Highway System, Remote roads and Contiguous roads). These standards and criteria employ an evaluation process that results in a numeric score being given for every project. Each project is scored with the most appropriate set of standards and criteria. This new process relies on a Project Evaluation Board and is know as the PEB process.

Thereafter, the projects from the PEB process and the NHS Plan will be compiled into a document known as the Needs List. The Needs List is a fiscally unconstrained document of all Alaska transportation projects. In addition to surface transportation modes, the Needs List considers harbor and aviation modes.

The final step in the project selection process for surface transportation projects is a document known as the STIP or Statewide Transportation Improvement Program. Unlike the Needs List, the

STIP is fiscally constrained. It also addresses only those projects eligible for Federal Highway and Transit funding. The STIP covers a three year period and contains those projects for which funding is reasonably certain. This general process is diagrammed on the following page.

How the PEB Decision Process will Work

Boroughs, cities, villages and other local governments as well as others interested in transportation have all been requested to make project nominations. The department is also submitting projects for consideration. The result of this nomination process will produce a large list of potential projects for consideration. Each project will be "scored" using a set of detailed evaluation standards and criteria.

First, a surface transportation project is assigned to one of five transportation types: TRAAK, Transit, Alaska Marine Highway System, Remote Roads and Contiguous Roads. Then each project is scored based on the standards and criteria for a particular transportation type. For each standard a score ranging from +5 to -5 is assigned. Then the score for each standard is multiplied by the numeric weight applied to each standard. Weights vary from 1 to 5 and are used to differentiate the importance of each standard. The composite score is the sum of all standards scores times the weights. The result is a numeric value that will be used to compare one project with another. The nearby example illustrates how scores and weights will be combined.

The scoring process will be undertaken two times. First, senior managers within the regional offices of the department along with the AMHS will score projects submitted to their offices. From this effort each of these four offices will then send the top-ranked projects they have scored to the PEB. The PEB will score the projects again. The PEB is composed of the department's executives representing all regions of the state. The scored projects from the PEB will be used to establish the Needs List.

Example
Road to Eaglewood
PEB Score Calculation

Standard	Score	Weight	Weighted Score
Standard 1	5	3	15
Standard 2	-3	2	-6
Standard 3	5	5	25
Standard 4	0	3	0
Etc.			
			Sum

The Needs List will be circulated for public review and thereafter it will be compiled into a new 1996-1998 STIP by the PEB. Thereafter a second round of public review will take place and then the STIP will be finalized and submitted to FHWA (Federal Highway Administration) and FTA (Federal Transit Administration) for approval.

What Will Happen to Existing Projects From The Previous STIP?

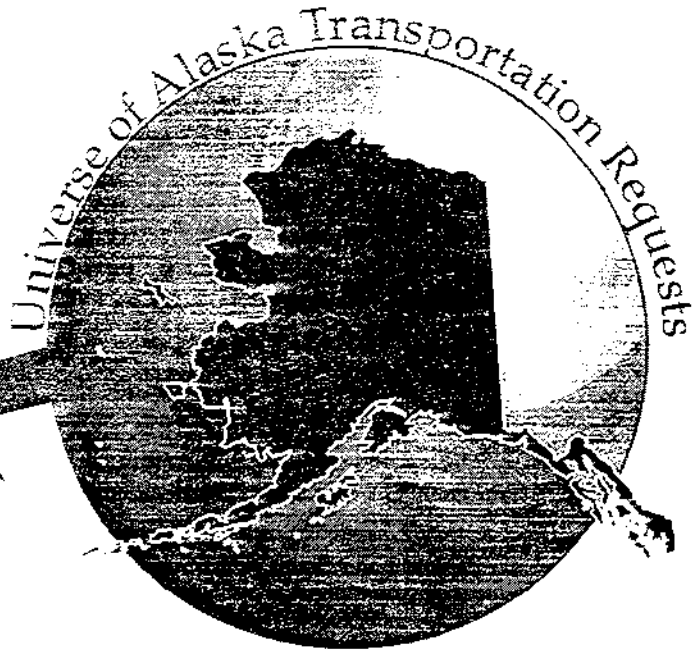
Most projects that are ready for construction as well as projects currently in design will be given priority in the PEB evaluation process. Projects that have not yet been started must compete with all other project nominations. Thus the new selection process will initially contain a blend of projects already in progress from the current STIP and new projects will best fit the new transportation initiative.

The NHS Explained

As noted, projects pertaining to the NHS will be administered separately by the department. The NHS is based on criteria established by Congress. Nationally, the NHS contains the most important routes in the country including the Interstate system and other significant routes. The NHS routes in Alaska consist of about 2,100 miles of highway routes compared to a statewide total of 14,300 miles of public road. About 1,900 miles of marine highway routes are

Process for Transportation Project Requests

Alaska Department of Transportation and Public Facilities



National/System & PEB
Decision Processes
Transportation Modes
Except NHS

Needs List
Comprehensive List of Eligible Transportation Projects

National Highway System Plan
Major State Highways
Major Ferry Routes

Other Statewide Decision Processes
Aviation Projects
Harbor Projects

Statewide PEB
Decision Process
FAA & FHWA
Funded Projects

STIP
Three-Year Funding Plan of FHWA/FTA Funded Projects

AIP
Three-Year Funding Plan of FAA Funded Projects

HARBOR
Capital Improvement Plan of General Funded & Corps of Engineers Funded Projects

included on the NHS compared to a statewide total of 2,865 miles of marine highway.

Briefly to be included on the NHS a highway or ferry route must serve one of the following functions:

- Interstate route
- STRAHNET route or major connector to STRAHNET route
- Provide Intermodal Connectivity (major road to major airport, port or ferry terminal)
- Provides rural/urban connectivity
- Connects to International Border Crossing

The NHS is capped to a maximum mileage of 155,000 nationally. Modifications to the NHS require the approval of the FHWA.

How are Aviation and Harbors Addressed?

Because both airport and harbor facilities are funded from different sources of money, the selection process for them is somewhat different from those funded with highway and transit funds. Currently, aviation and harbor projects are incorporated into the department's Needs List, but they are considered separately for funding approval and are funded under programs with differing levels or adequacy of funding.

Aviation projects are funding out of Federal Aviation Administration funds. The department, using FAA criteria, prepares a document known as the Aviation Improvement Program or AIP that discloses projects approved for this funding.

Harbor projects use a combination of U.S. Corps of Engineers funding and state General Funds. The department's harbor staff are developing a set of evaluation standards and criteria similar to those prepared for surface transportation. These new standards and criteria will be used to select harbor projects.

Project Partnerships

In most cases, the department will continue to manage the design and construction phases of projects. The federal requirements for transportation projects are complex, and most communities are not structured with staff knowledgeable in the requirements of environmental documents, right-of-way, relocation, design standards and construction monitoring per these federal requirements. For a few larger sponsors, who have sufficient trained personnel and project workload to justify the burden of learning federal requirements, the department will transfer implementation responsibility. The partnerships created by this project approach are critical to the success of this program. The department commits to working cooperatively with sponsors in this effort.

Time Schedule

The schedule for this effort is admittedly fast. This is necessary to implement the plan in 1996. To address the imbalance between smaller and larger communities, the department is committed to assisting small communities who frequently do not have knowledgeable staff. We have also extended the time necessary for local government resolutions. We understand that summer is busy season in rural communities and not the ideal time to request information. To have waited longer would only postpone the new initiative by a full year.

Achieving Success

The competition for both CTP and TRAAK funds will be high. Project sponsors who are not successful in their first attempt to secure funding should evaluate their proposed project in light of the criteria. In many cases, adjustments in project scope, purpose and responsibility can positively affect how a project is scored.

List of Important Acronyms and Terms

In order to assist the reader with some of the arcane abbreviations and terms used in transportation, the following explanation is provided:

AIP	Aviation Improvement Program	List of Projects programmed for funding under FAA requirements.
AMHS	Alaska Marine Highway System	The department's system of vessels, terminals and routes that link most of Alaska's coastal communities from the Aleutians to Southeast.
CTP	Community Transportation Program	A new program of the Alaska Department of Transportation and Public Facilities that addresses a wide range of community transportation modes including rural and urban roads, transit, and ferry routes.
FAA	Federal Aviation Administration	The federal agency of the US Department of Transportation responsible for funding aviation projects.
FHWA	Federal Highway Administration	The federal agency of the US Department of Transportation responsible for funding highways and ferries.
FTA	Federal Transit Administration	The federal agency of the US Department of Transportation responsible for funding transit systems.
Needs List	-	A document divided into four levels of priority containing all transportation funding requests pending before the department. It addresses highways, ferries, trails, airports and harbors.
NHS	National Highway System	The most important highways and ferry routes in the United States. The FHWA controls this list.
PEB	Project Evaluation Board	A board empowered to evaluate projects comprised of six members of Alaska Department of Transportation and Public Facilities: Deputy Commissioner, Statewide Planning Director, Alaska Marine Highway System Director, and three Regional Directors.
STIP	Statewide Transportation Improvement Program	A fiscally constrained spending plan covering a three year period.
STRAHNET	Strategic Highway Network	Highways which are important to the United States strategic defense policy and which provide defense access, continuity, and emergency capabilities for the movement of personnel, materials, and equipment in both peace time and war time.
TRAAK	Trails and Recreational Access for Alaska	A new program of the Alaska Department of Transportation and Public Facilities that addresses trails, scenic highways, recreational access and interpretive facilities for Alaska.

For More Information

Please contact one or more of the following offices if you have comments about the new transportation initiative or wish to seek further information.

Name, Title & Organization	Phone	Fax
Tom Brigham, Director Division of Statewide Planning, Juneau	465-4070	465-6984
Dawn Mach, Planning Chief Alaska Marine Highway System, Juneau	465-8864	465-2746
Martin Ott, Planning Chief Northern Region, Fairbanks	451-5151	451-2333
John Tolley, Planning Chief Central Region, Anchorage	266-1462	248-1573
Mike McKinnon, Planning Chief Southeast Region, Juneau	465-1774	465-2016